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DROPLETS FROM THE PLANKTON NET XXI.
WHITE SHELLS OF *IANTHINA PROLONGATA* BLAINVILLE¹⁾

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The fishermen of this vicinity were annoyed by the drop in price of mackerel and jack mackerel caught so richly in the coastal waters of this area after the end of August. Probably this was caused by the disappearance of the cooler coastal water mass and the approach of the warm water current toward shore. On Sunday afternoon, September 5, 1965, at the end of his summer vacation my son, Takasi, Jr., found a number of pleustonic animals were just being stranded on the northern sand beach of the laboratory. Being helped by the small boy, Chihiro NISHIMURA, he gathered most of them and brought the collection to me for observation. This collection included 643 janthinas, 62 portuguese-men-of-war, 3 velellas and a considerable number of porpitas. The last members were less than 38 mm in diameter and mostly heavily damaged. *Velella* was less than 23 mm in length and the sail was stretched from the left above to right below (NW to SE). Of 62 physalias 56 were right-handed individuals, while the other 6 were left-handed and very small, less than 19 mm in length of pneumatophore.

Of 643 janthinas, 630 were *Ianthina prolongata* BLAINVILLE (= *globosa* SWAINSON), 9 were *I. umbilicata* D'ORBIGNY (= *globosa* BLAINVILLE), and 4 were *I. janthina* (LINNÉ). Four shells of *I. janthina* were all young shells, 4 mm high by 6 mm wide to 9 mm high by 11 mm wide, and of the flattened form known generally in this country by the name *Ianthina balteata* REEVE. Shells of *I. umbilicata* were 6 mm high by 6 mm wide to 11 mm high by 10 mm wide.

Shells of *I. prolongata* were 6 mm high by 7 mm wide to 29 mm high by 27 mm wide. The colouration differs considerably from specimen to specimen, but there is generally seen the trend toward fading of the colour with the increase in shell size. Smaller shells are most frequently purplish throughout, leaving a white belt along the suture, while in the larger specimens of *I. prolongata* the shell surface under the water in the living state on the sea surface, which includes the whole spire and the upper side of the body whorl, becomes much paler than the underside of the last whorl exposed to the light. On the underside of the body whorl, the purplish colour is especially deep in the proximal half of the whorl. The above mentioned fading may

1) Contributions from the Seto Marine Biological Laboratory, No. 449.

rarely occur on smaller shells and contrarily some larger shells may retain the deep colouration characteristic of the smaller shells. Thus smaller shells resemble very closely those of *I. umbilicata*. However, the young of the two species can be distinguished from each other by the fact that in *I. umbilicata* the white belt along the suture is generally narrower and more sharply defined. Also in *I. umbilicata* the shell has a rather bluish hue throughout, while in *I. prolongata* the shell is a little pinkish. In *I. umbilicata* the spire is higher, the contour of respective whorls of the spire shows less curvature and the keel, though very narrow, is much more distinctly defined than in *I. prolongata*. These features may be helpful in identifying exactly shells of these species with broken apertures.

It was most strange that in this population there were found thirteen whitish shells of *I. prolongata*. These shells are 9 mm high by 9 mm wide to 18 mm high by 16 mm wide in size and quite the same in appearance as the usual coloured shells, excepting their lack of colour for the most part. They are wholly whitish throughout the spire and the upper surface of the body whorl but lightly purplish at the protoconch except for the 11 mm high by 10 mm wide shell in which the protoconch is quite colourless. On the under-side of the body whorl, only the small limited area near the proximal end of the columella is faintly coloured purplish. The animal body of *I. prolongata* is generally coloured light purplish, while it is quite whitish for individuals with white shells. When I examined the collected fresh specimens I thought at first sight that those individuals with whitish shells had been dead for at least several hours. But really they were still alive and ejected the purplish ink from the mantle cavity when given strong stimulation in handling them.

When the whole collection of shells is arranged by colouration from deep to light, it may be noticed with surprise that the group of whitish shells seems rather isolated from the others, with scarcely any intermediate shells showing the gradual fading. Moreover, Dr. R. BIERI told me that in handling many shells for measurements he felt that the white shell of *I. prolongata* seemed more fragile and thinner than the coloured ones. Possibly this might be a genetical race, although it cannot be an albino as some faint colour patches are still remaining.

Again on Friday afternoon of November 5, and some subsequent days, other swarms of janthinas were stranded on the same beach. These groups consisted chiefly of *I. prolongata*, but included more *I. balteata* than in the former case; *I. umbilicata* was quite insignificant again. Some *Porpita* and a few *Velella* and *Physalia*, a considerable number of *Glaucus* and some *Lepas anatifera* were found associated with *Ianthina*. In these cases only three white shells were included. They were from 8 mm high by 8 mm wide to 24 mm high by 23 mm wide.

For these notes I wish to express my hearty thanks to Dr. R. BIERI and Mr. H. TANASE for their kindness in offering me the data.

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